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# MULTIMEDIA UNIVERSITY

## FINAL EXAMINATION

TRIMESTER 1, 2018/2019 SESSION

**TSN 2201 / TCE2321 – COMPUTER NETWORKS**  
(All Sections / Groups)

18 OCT 2018  
9:00 a.m – 11:00 a.m  
(2 Hours)

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### INSTRUCTIONS TO STUDENTS

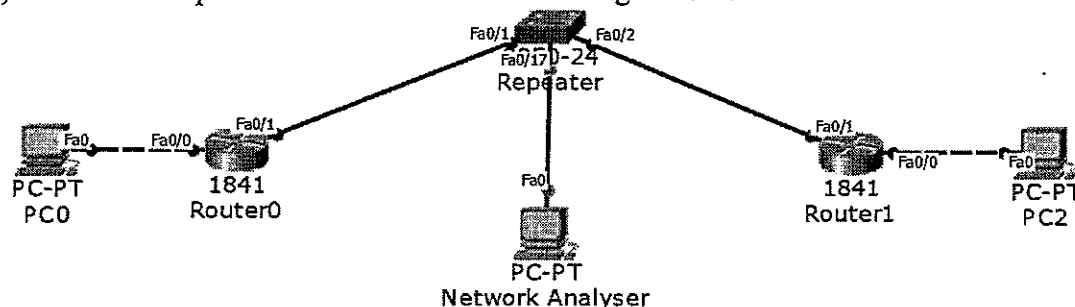
1. This Question paper consists of 6 printed pages including cover page with 5 questions only.
2. Attempt **FIVE** out of **FIVE** questions. All questions carry equal marks and the distribution of marks for each question is given.
3. Please write all your answer in the Answer Booklet provided.

**Question 1 [10 marks]**

(a) Which OSI layer perform the encryption process?

[1 mark]

(b) Answer the question based on the network diagram below.



Device Name	IP Addressing	MAC address
PC0	200.1.1.1	08:00:11:00:00:01
PC2	200.1.3.1	08:00:11:00:00:02
Network Analyser	200.1.2.1	08:00:11:00:00:03
Router0 fa0/0	200.1.1.254	10:00:11:00:00:01
Router0 fa0/1	200.1.2.1	10:00:11:00:00:02
Router1 fa0/0	200.1.3.254	10:00:11:00:00:03
Router1 fa0/1	200.1.2.2	10:00:11:00:00:04

The network analyser managed to capture a packet with a source IP 200.1.1.1 and a destination IP 200.1.3.1. What is the source and destination MAC address captured by the network analyser?

[2 marks]

(c) What is the round trip time (2 x propagation time) for a signal in fibre optic from Kuala Lumpur to San Francisco? The distance is 13,500km and the propagation speed for a fibre signal is 240,000km/s.

[2 marks]

(d) In a noisy channel, the maximum capacity is 1 Mbps, the bandwidth is 200KHz. What is the SNR value?

[3 marks]

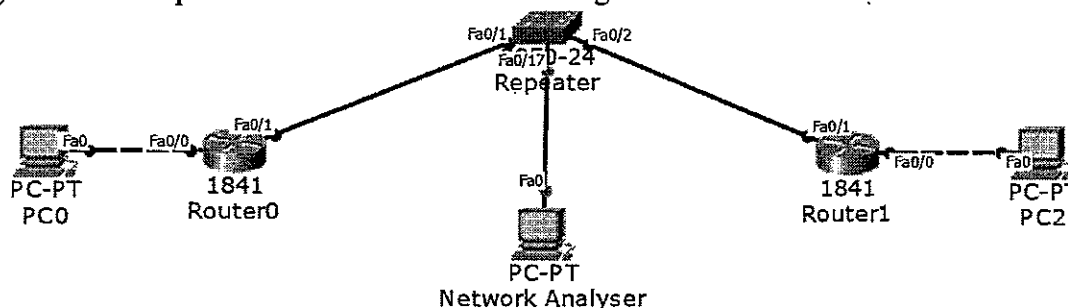
(e) At the sender end, the power level is 10milliwatt. At the receiver end, the power level is 0.25 milliwatt. What is the power loss in decibel?

[2 marks]

**Continue ....**

**Question 2 [10 marks]**

(a) Answer the question based on the network diagram below.



You have to guess the valid network mask information

Device Name	IP Addressing	MAC address
PC0	200.1.1.1	08:00:11:00:00:01
PC2	200.1.1.199	08:00:11:00:00:02
Network Analyser	200.1.1.160	08:00:11:00:00:03
Router0 fa0/0	200.1.1.109	10:00:11:00:00:01
Router0 fa0/1	200.1.1.129	10:00:11:00:00:02
Router1 fa0/0	200.1.1.254	10:00:11:00:00:03
Router1 fa0/1	200.1.1.180	10:00:11:00:00:04

The network is configured using static routes. All devices are working properly. Write down the output when “show ip route” is typed in Router1.

[3 marks]

(b) Write down the static route configuration for Router0.

[2 marks]

(c) Switch A port fa0/1 is connected directly to Switch B port fa0/1 via a UTP cable. Explain why, if switch A port fa0/1 is a Root Port, then switch B port fa0/1 must be a Designated Port ?

Note: (you may want to draw out a diagram to explain your answer)

[2 marks]

(d) Switch A port fa0/1 is connected directly to Switch B port fa0/1 via a UTP cable. Explain why, if switch A port fa0/1 is a Designated Port, then switch B port fa0/1 is not necessary a Root Port ?

Note: (you may want to draw out a diagram to explain your answer)

[3 marks]

**Continue ....**

**Question 3 [10 marks]**

(a) You have 3 PCs in the same IP subnet. You have root access to all these PCs but you can only access the cmd prompt screen to enforce your policy and cannot enable firewall on it.

No	IP address	Can ping	Can't ping
PC1	1.1.1.1	PC2, PC3	
PC2	1.1.1.2	PC1	PC3
PC3	1.1.1.3	PC1	PC2

Write down the command to enforce the security policy.

Tips: Lab 2.2 in your lab sheet.

[2 marks]

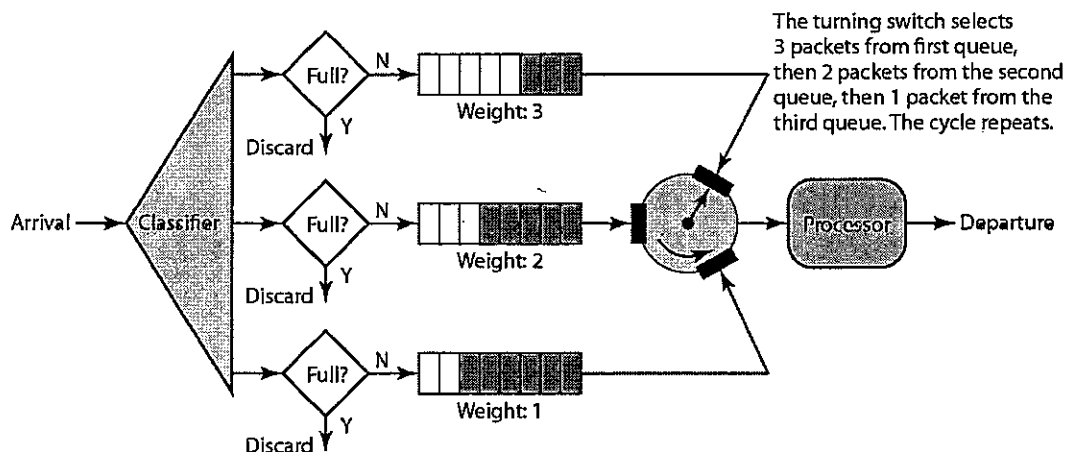
(b) Give one disadvantage of portable IP address assignment practiced during the early stage of Internet by Internet Service Provider.

[2 marks]

(c) What is traffic shaping? Name two methods to shape traffic.

[2 marks]

(d) Answer the questions based on the following figure.



- State the name of this scheduling technique [1 mark]
- Which queue has the lowest priority? [1 mark]
- What will happen if the average arrival rate is higher than the average processing rate? [2 marks]

Continue ....

**Question 4 [10 marks]**

(a) Abbreviate the following IPv6 addresses. [3 marks]

- (i) 50C1:DA80:00C8:0000:0000:0000:0000:0002
- (ii) FFE0:0501:0008:0000:0000:97FF:FE40:000B
- (iii) 0:0:0:0:0:0:0:1001

(b) What is the prefix of an IPv6 link local address? Given an Ethernet station with the mac address of B001C72368EA, explain (with the help of a figure) how to configure an IPv6 link local address for this station using the mac address.

[2 marks]

(c) The need for multicasting in the Internet has been increasing, but not all routers in the Internet are multicast routers. Explain briefly the method used to transmit multicast packets across networks with unicast routers.

[3 marks]

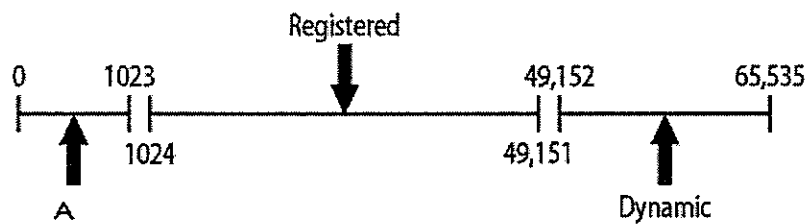
(d) What is the Ethernet multicast address for this IP address 233.220.25.7?

[2 marks]

**Continue ....**

**Question 5 [10 marks]**

- (a) State TWO identifiers that are needed to form a socket address for a process-to-process delivery. [2 marks]
- (b) The following figure shows the IANA ranges for port numbers.



- i) Name the port range A [1 mark]
- ii) Which process can use ports in range Dynamic? [1 mark]
- iii) How many bits are allocated for the port number in the transport layer data? [1 mark]
- (c) What is connectionless service in the transport layer? Name one connectionless protocol in the transport layer. [2 marks]
- (d) The following questions are related to flow control
- i) Explain briefly why sliding window is used in flow control? [1 mark]
- ii) Calculate the receiver window (rwnd) for computer A if the receiver, computer B has a buffer size of 4500 bytes and 2200 bytes of received and unprocessed data? [1 mark]
- iii) Continue from (ii), what is the size of the window for computer A if the congestion window (cwnd) is 1500 bytes? [1 mark]

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